

**REMARKS**

Claim 1, 14, 16, 26 and 28 have been amended. Claims 49-51 have been added. Claims 1-3, 6-11, 14-16, 20, 22-24, 26-34 and 49-51 are pending. Applicant reserves the right to pursue the original claims and other claims in this and in other applications.

Claims 1 and 10 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2004/0227061 ("Clevenger"). Applicant respectfully traverses the rejection.

Claim 1 recites an image sensor comprising "a substrate formed over a base layer; a plurality of pixel cells formed within said substrate, each pixel cell comprising a photo-conversion device; and a plurality of trenches, each trench being provided along a perimeter of a respective pixel cell, each trench extending at least to a surface of the base layer, each trench having sidewalls, and being at least partially filled with a material that inhibits electrons from passing through said trench." Clevenger does not teach or suggest all of the limitations of claim 1.

Clevenger is directed to a method and structure for a three-dimensional pixel photo-sensor that improves pixel packing density by having a plurality of photodiode cores, light sensing sidewalls along an exterior of the cores, trenches separating the cores and a transparent material in the trenches. (Clevenger, ¶¶ [0002], [0010]-[0011]; FIGS. 1-12). The trenches 116A, 116B in the Clevenger device have a depth that is preferably equivalent to that of the buried n+ region 106. (Clevenger, ¶ [0049]; FIG. 8-10). The trench 202 of the claimed invention extends at least to a surface of the base layer 201. (FIGS. 3-6). Unlike the trench 202 of the claimed invention, the trenches 116A, 116B of the Clevenger device do not extend to the surface of the intrinsic

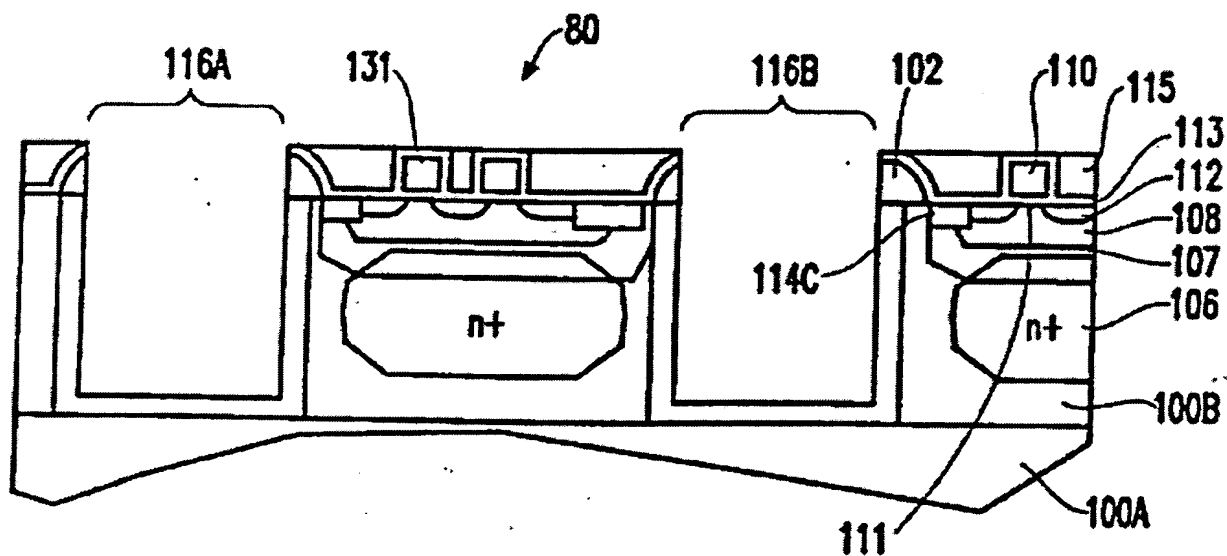
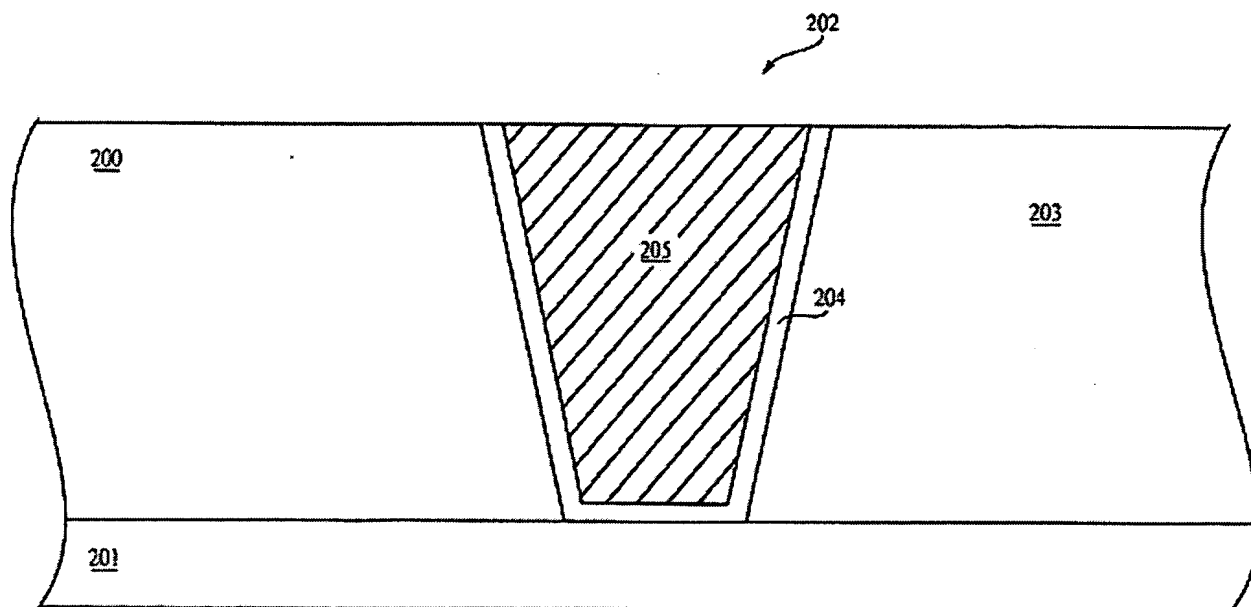


FIG. 8 of Clevenger

epitaxially grown silicon layer 100B. (Clevenger, FIGS. 8-11). In fact, a p+ type implant 118A, 118B is provided above the base layer 201 along the bottom of the trenches 116A, 116B. (Clevenger, ¶ [0050]; FIGS. 9-12). Further, the etching process of Clevenger

leaves an underlying silicon 100B at the bottom of the trenches as a fairly roughened surface to reflect light beams toward the vertical surfaces of the trench. (Clevenger, ¶[0051]).

Since Clevenger fails to teach all of the limitations of claim 1, the rejection of independent claim 1 and dependent claim 10, as well as dependent claims 2-9 and 11-13, be withdrawn and the claims allowed.

Claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clevenger in view of U.S. Publication No. 2003/0089929 ("Rhodes"). Applicant respectfully traverses the rejection.

The effective filing date of Rhodes is February 14, 2001 and the publication date is May 15, 2003. The effective filing date of the present application is February 20, 2004. Because Rhodes published within a year prior to the application filing date, Rhodes qualifies only as a § 102(e) prior art reference. Pursuant to 35 U.S.C. § 103(c), Rhodes, a § 102(e) reference, cannot properly be cited in a rejection under 35 U.S.C. § 103(a) in the present application. Rhodes and the present application are commonly owned by the same assignee. A Statement Concerning Common Ownership, as required under MPEP § 706.02(l)(2), is included below.

#### **Statement Concerning Common Ownership**

Applicants' undersigned attorney states that both the present application and Rhodes were, at the time the invention was made, subject to an obligation of assignment to the same person, namely, Micron Technology, Inc. For at least this reason, Applicants respectfully request the 35 U.S.C. § 103(a) rejection of claims 8 and 9 be withdrawn. Attached are copies of the assignment particulars for the Rhodes publication and the present application.

Claims 2, 3, 6, 7, 14-16, 20, 22-24 and 26-34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Clevenger in view of Rhodes and further in view of Japanese patent JP 363009968 ("Yoshinori"). Applicant respectfully traverses the rejection.

As set forth above, Rhodes cannot properly be cited in a rejection under 35 U.S.C. § 103(a) in the present application. Therefore, Applicant respectfully submits that the rejection of claims 2, 3, 6, 7, 14-16, 20, 22-24 and 26-34 be withdrawn and the claims allowed.

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

Dated: December 21, 2006

Respectfully submitted,

By 

Thomas J. D'Amico

Registration No.: 28,371

DICKSTEIN SHAPIRO LLP

1825 Eye Street, NW

Washington, DC 20006-5403

(202) 420-2200

Attorney for Applicant

## ASSIGNMENT AND AGREEMENT

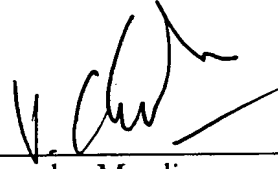
For value received, I, Chandra Mouli, hereby sell, assign and transfer to Micron Technology, Inc., a corporation of the State of Delaware, having an office at 8000 S. Federal Way, Boise, Idaho 83706-9632, U.S.A., and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to an invention entitled REDUCED CROSSTALK SENSOR AND METHOD OF FORMATION, described in an application for Letters Patent of the United States, executed by me of even date herewith, and all the rights and privileges in said application and under any and all Letters Patent that may be granted in the United States for said inventions; and I also concurrently hereby sell, assign and transfer to Micron Technology, Inc. the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

I authorize Micron Technology, Inc. to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other form of protection for said inventions, without further authorization from me, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of Micron Technology, Inc. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

I request that any and all patents for said inventions be issued to Micron Technology, Inc. in the United States and in all countries foreign to the United States, or to such nominees as Micron Technology, Inc. may designate.

I agree that, when requested, I shall, without charge to Micron Technology, Inc. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.




Chandra Mouli

Date: 1/23/04

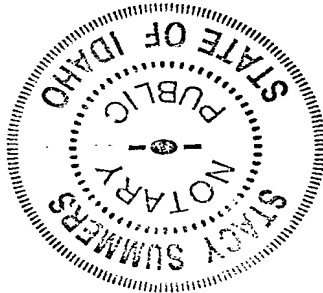
United States of America )  
State of Idaho ) ss.:  
County of Ada )

On this 23<sup>rd</sup> day of January, 2004, before me personally came Chandra Mouli, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged execution of the same.



Notary Public

expires 9/18/10



## ASSIGNMENT AND AGREEMENT

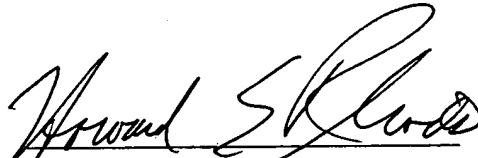
For value received, I, Howard E. Rhodes, hereby sell, assign and transfer to Micron Technology Inc., a corporation of the State of Delaware, having an office at 8000 S. Federal Way, Boise, Idaho 83706-9632, U.S.A., and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to an invention entitled TRENCH PHOTODIODE FOR A CMOS IMAGER described in an application for Letters Patent of the United States, executed by me of even date herewith, and all the rights and privileges in said application and under any and all Letters Patent that may be granted in the United States for said inventions; and I also concurrently hereby sell, assign and transfer to Micron Technology, Inc. the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

I authorize Micron Technology, Inc. to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other forms of protection for said inventions, without further authorization from me, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of Micron Technology, Inc. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

I request that any and all patents for said inventions be issued to Micron Technology, Inc. in the United States and in all countries foreign to the United States, or to such nominees as Micron Technology, Inc. may designate.

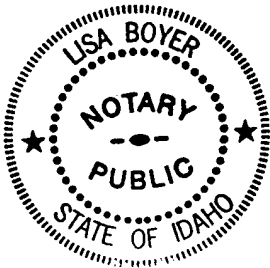
I agree that, when requested, I shall, without charge to Micron Technology, Inc. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.


  
Howard E. Rhodes

Date: 11/26/99

United States of America )  
State of Idaho ) ss.:  
County of Ada )

On this 26 day of January, 1999, before me personally came Howard E. Rhodes, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged execution of the same.



  
Notary Public